

The Health Effects of Downsizing in the Nuclear Industry

NEVADA TEST SITE

Executive Summary

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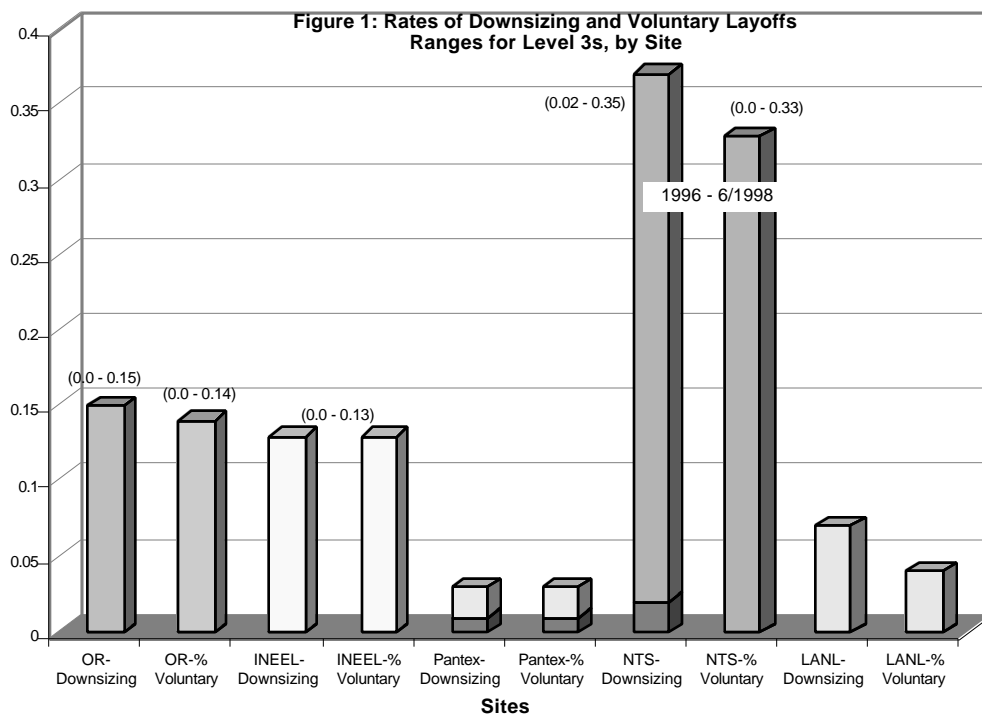
Copies of the complete report are available in the Nevada Department of Energy Reading Room or contact **Nevada Operations Office Public Affairs contact:** Darwin Morgan, 702-295-1755 or **Bechtel Nevada Public Affairs contact:** Cheryl Oar 702-295-2966

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Executive Summary

Organizational restructuring within the defense industry prompts research on health effects.

The dissolution of the Soviet Union and the ending of the Cold War in 1992 resulted in marked shifts in United States military strategy and budgets. Consequently, Congress passed Section 3161 of the National Defense Authorization Act for Fiscal Year 1993 outlining an approach to workforce layoffs in the nuclear weapons industry. Since then, there have been 46,000 layoffs of contractor employees at Department of Energy sites. More than 14,000 employees were downsized from the five study sites between September 1991 and September 1998 through voluntary and involuntary layoff events. In 1999, employment at the five sites was from nine to sixty nine percent lower than the highest employment level during the 1990's. The downsizing rates for each of the sites, including overall downsizing and the extent to which layoffs were of a voluntary nature, are presented below in Figure 1.



To better understand the impact of such downsizing and other organizational changes on both the remaining workforce and those who lost their jobs, the U.S. Department of Energy (DOE) and the Centers for Disease Control (CDC) solicited research proposals.

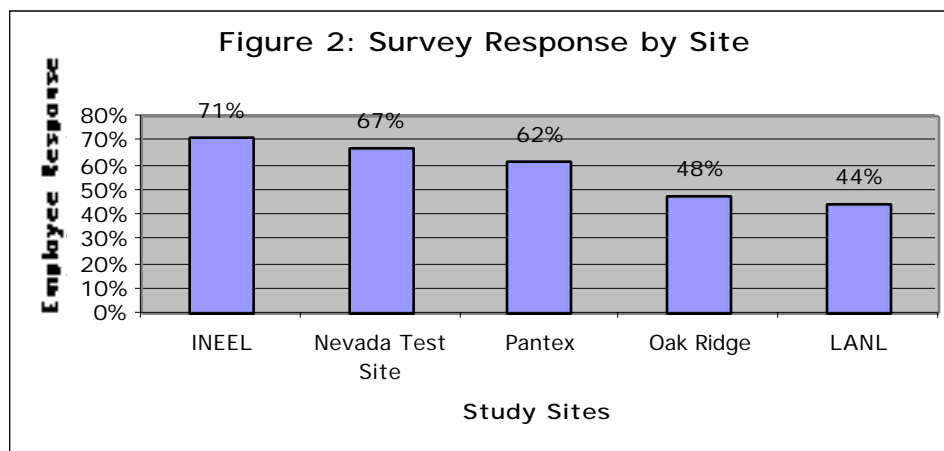
Boston University School of Public Health, with funding from the National Institute of Occupational Safety and Health (NIOSH), was selected to study and recommend ways to mitigate the impacts of workforce reductions on individual and organizational health.

This study required enormous cooperation. Our biggest thanks are to the nearly 6,000 employees who participated in focus groups or interviews and completed surveys, and to those supervisors who helped make that possible. This report was peer reviewed by two experts in the field of workplace stress and psychosocial research.

Boston University School of Public Health study is most far reaching of its kind.

Our research, covering the period from 1991 through June 1998, is the largest of its kind--in both scale and scope--to investigate the health and organizational effects of workplace restructuring. Marrying the disciplines of public health, organizational psychology and organizational management, we used several methodologies and designed a multi-level research model to best capture the complexity and variety of relevant data.

In our survey, which was only one piece of the data collection, we sampled 10,645 employees from our five study sites (or 43% of all eligible employees at those sites). We received an overall response of 55% and, at the Nevada Test Site 71% of the sample or 699 employees completed the survey (BN and WSI). Figure 2 compares response rates by site.



Globally, downsizing and organizational restructuring have become common management tools, used to improve operational and fiscal efficiency. However, little is known, about the effects of these tools on employee health or organizational effectiveness. Therefore, the knowledge sought through this research is important for employees, unions, and other employee organizations, contractors and federal entities managing organizational change in DOE facilities, as well as for those in other industries.

We identified and investigated four key issues in downsizing, reorganization and health.

1. Downsizing will have a negative effect on individual health and workplace functioning (i.e., employee morale, work performance and job security).
2. Employees are less likely to experience negative health effects and organizations are more apt to function normally the fairer the downsizing process and the fewer direct elements of downsizing the employee experiences.
3. During periods of organizational change, one's work and work environment, including job strain*, organizational style, co-worker and supervisor support, and workplace safety will affect both individual health and workplace functioning.
4. Workplace factors including job strain, organizational climate, and the employee's perception of the fairness of the downsizing process can moderate the impact of downsizing on health and organizational outcomes.

Findings at Nevada Test Site Demonstrate Need to Develop Interventions for Improved Employee Health.

NTS was chosen as a study site based on two primary demographic and downsizing characteristics. The site is located near a large urban area that is undergoing a multi-year economic boom. New and reasonably well paying jobs continue to be created in Las Vegas offering NTS workers continual employment opportunities. The

• Definitions of terms

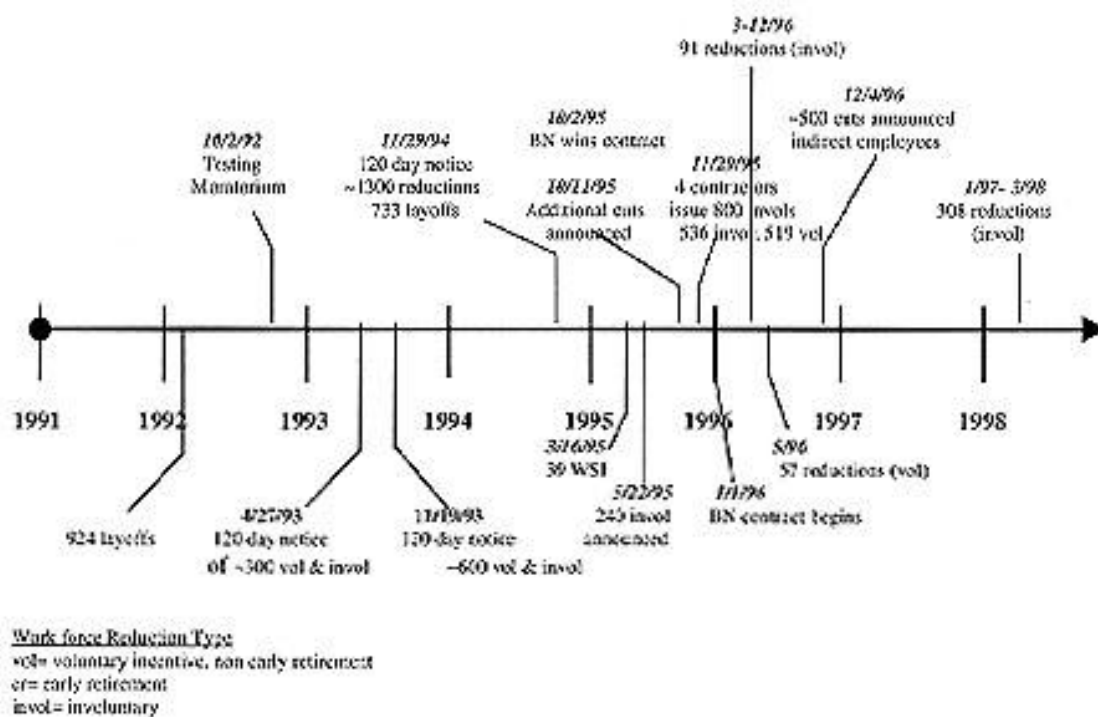
Job strain measures both the “demand” one experiences at work (physical and psychological) and the “control” an employee has over work tasks, where job control refers to the ability to structure your work, feel challenged and use your skills and training. Job strain is measured using three scales: the job demands scale, the decision authority scale and the skill discretion scale.

Organizational style refers to managerial and leadership approaches, with particular attention to how relationships and problems are handled. We looked at the company's organizational style using four scales on: 1) handling conflict, 2) the relationship with the DOE, 3) how management communicates with employees, and 4) workplace violence.

Organizational climate is used here as an umbrella term for work environment issues. We include the components of organizational style listed above (four scales) as well as co-worker and supervisor support and workplace health and safety (three scales measuring general safety, toxic exposure and exposure to noise).

downsizing story at NTS is dramatic. Downsizing followed shortly after the October 2, 1992, Testing Moratorium and continued throughout the study period. A large-scale reduction occurred midway through the study period within months of Bechtel Nevada winning the NTS contract. The downsizing coincided with profound organizational and mission changes along with the replacement of the site's longstanding contractor. The timeline below (Figure 3) diagrams the downsizing events and other major organizational changes experienced at the NTS from January 1991 through June 1998.

FIGURE 1: Timeline of Downsizing and Restructuring Events at NTS



Our research yielded the following five site-specific findings at Nevada Test Site.

1. Employees who perceived that downsizing was implemented with clearly explained reasons, worker input, open respectful, truthful and unbiased communication with employees, and consistent and fair rules experienced fewer negative health effects.
 - A process perceived as just and fair was associated with fewer reported medical symptoms.
 - Greater fairness was associated with fewer survivor syndrome symptoms.

- The more fair the downsizing, the less job insecurity was expressed and the higher the reported morale.
2. Employees who reported more direct experiences of the downsizing, had poorer mental and physical health status and a greater sense of job security.
 - A higher score on the downsizing experiences index was associated with a greater number of medical symptoms and conditions.
 - These employees had lower mental health scores (MCS).
 - The more downsizing elements experienced, the lower the job security expressed.
 3. Employees who experienced greater job strain reported an increase in adverse individual and organizational functioning outcomes.
 - Higher job strain was associated with poorer reported mental health status, increased symptoms of survivor syndrome and increased stress.
 - Workers with high strain jobs experienced greater job insecurity.
 4. A supportive supervisor and co-workers, good organizational relations and a safe workplace are associated with better employee health and organizational functioning.
 - Employees who reported receiving greater support from their manager and co-workers saw higher morale amongst their co-workers.
 - Employees who perceive that their managers have good relations with DOE or feel that there is healthy resolution of conflict at the site reported fewer instances of poor work performance.
 - The perception of a less safe workplace was associated with lower morale, while a belief that one is exposed to toxicants was predictive of more medical symptoms.
 - Qualitative data reports to a perceived association between poor management (unfair practices, poor communication, etc.) and low morale and motivation.
 5. Employees who experience threats or acts of violence, harassment or discriminatory treatment have worse health outcomes.
 - Employees who reported more experiences of violence, harassment or discriminatory treatment reported worse physical health (on all three measures).
 - These employees were also more likely to report lower overall mental health and more perceived stress (although lower survivor syndrome) at NTS.
 - An increased experience with violence or harassment was predictive of greater job insecurity and greater frequency of poor work performance.

6. Employees expressed some consistent concerns in employee discussion groups, interviews and comments written on the surveys. We heard that:
- although new missions have curbed some fears about job security, continued downsizing has led to a mindset that jobs will never be secure;
 - personnel were feeling more a part of BN, rather than relics from the old contractors, although some expressed the “us” versus “them” tension;
 - while new missions for the site have improved employee trust in BN, the technical trades still do not feel that BN understands and supports their needs and expertise;
 - contrary to our expectation, the growth of the local economy was not reassuring to many NTS employees since they believed that job skills at NTS are very specialized and are not seen as transferable to jobs available in the Las Vegas area.

NTS findings are similar to findings at four other study sites.

At all five sites, our survey, focus group and interview data show the importance of a fair and just downsizing process on employee health. The more elements of downsizing that individual employees experience, the more likely they are to suffer negative effects, particularly related to medical symptoms, overall mental health and job security. High job strain had negative effects on employee mental health and job security that is similar to the other sites.

The experience of violence or harassment predicted negative outcomes at three sites but it did not emerge as important at two others. At NTS, the violence/harassment index was significantly associated with all outcomes except morale, more than at any other site. Support from one’s supervisors and co-workers was not as important at NTS as at the other sites.

Study employs various methods to understand the complexity of downsizing and organizational change.

We used multiple approaches to collect and compare information about the extent of downsizing, employees’ perceptions of the downsizing, workplace safety and other organizational issues. Through our interviews with key individuals, focus group discussions and work-site observations, we were able to glean characteristics and themes within the workplace as perceived by the employees themselves. This qualitative data revealed aspects of employee culture and organizational climate that could not be obtained with other research techniques.

A central source of data was the responses to the *Boston University Workplace Survey*. The survey was sent to a random selection of 921 Bechtel Nevada (BN) employees and 113 Wackenhut Security (WSI) employees. We received a response of 699 (68%) from BN and WSI employees. This survey, based on our review of

relevant literature and knowledge gained from interviews and focus group discussion, was pilot tested at four sites, reviewed by NIOSH institutional boards and then revised.

We also reviewed archival records (including sick time data, overtime usage, downsizing data and accident and illness data, medical services utilization, etc.) for their potential use in this research.

Researchers maintained a high level of communication with employees and their communities throughout the study.

Throughout our research, we maintained the highest levels of communication with employees and members of their communities. We sponsored town and community meetings to relay information about and receive feedback on our study. We obtained informed consent from employees involved in any interview, focus group or who completed the employee survey. At various stages of the research we made available information about the study and research updates for publication in site and local media. Additionally, we established a study e-mail account and posted information on the World Wide Web. We will be presenting our results at each site and will make available written materials at all sites and by request from researchers and on the Web.

Researchers recommend interventions that target many levels of the organization and include further research.

Our findings point to many ways to mitigate negative impacts on employee health and workplace functioning. In order to be most effective, an intervention design should address the following three organizational levels and should feature a variety of approaches. We provide here only a few examples within each category. Our complete list of recommendations can be found in the final report for Nevada Test Site: The Health Effects of Downsizing in the Nuclear Industry: Findings at the Nevada Test Site.

At the policy and structural level, interventions should include, for example, programs and policies to address: any incidence of workplace harassment and violence; flexible work schedules that respond to employee concerns about workload, work demand and poor work-home balance; and preparation and training of managers who must plan or implement a downsizing or restructuring event.

Interventions that address procedures and group functioning should include, for instance: training for managers on effective supervision and communication; employee training on workplace diversity; and programs that encourage employees to respond to workplace change openly.

Individual level interventions should include, for example: sessions on exercise and stress reduction; collaboration with employees to redesign jobs or work stations; and information that use of the Employee Assistance Program will not detrimentally affect one's career.